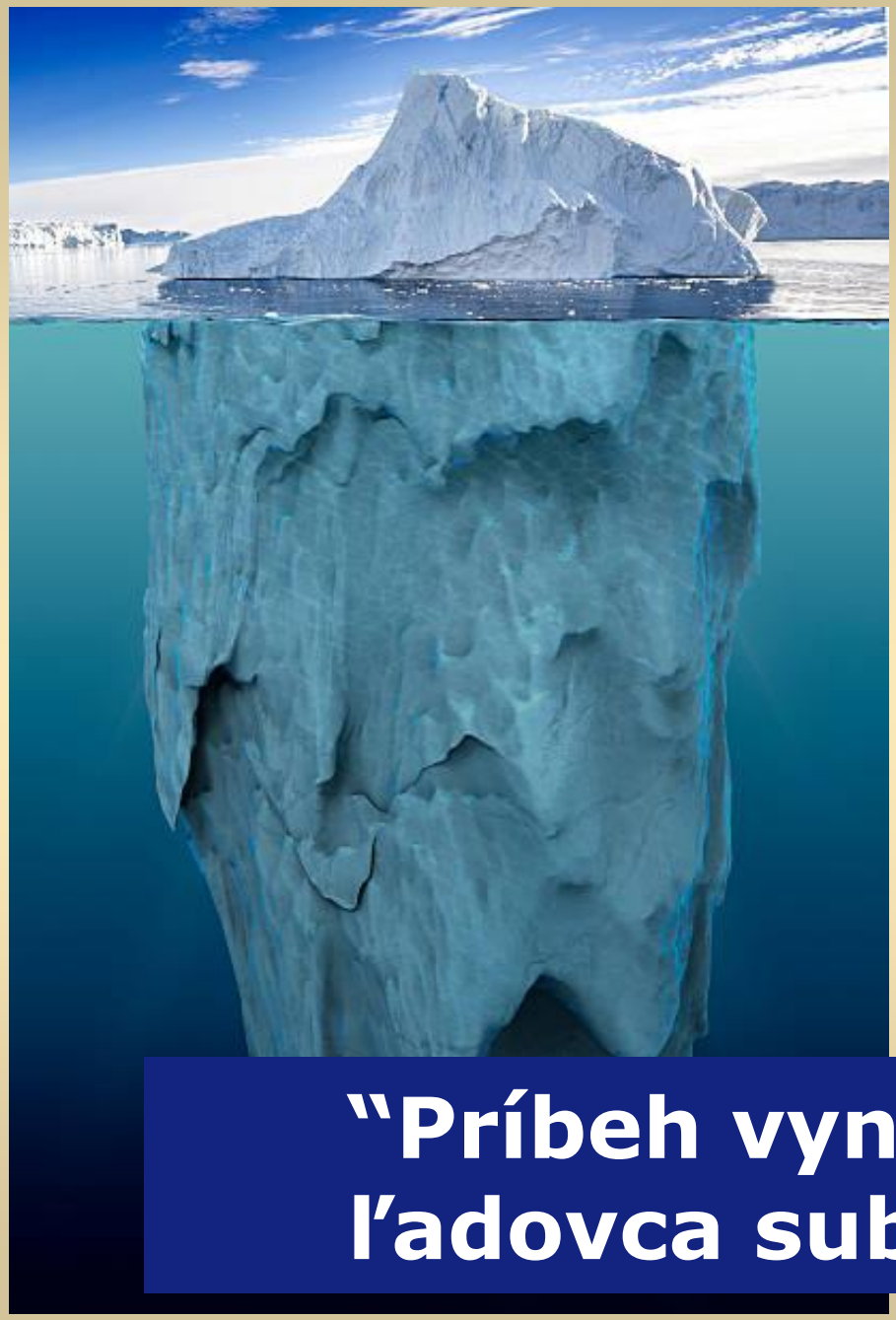
Sympozium Medtronic Czechia s.r.o.

“Efektivní diagnostické přístupy”

7.5.2018

DIAGNOSTIKA A MANAŽMENT SUBKLINICKEJ FIBRILÁCIE PREDSIENÍ

ROBERT HATALA
Oddelenie arytmií a kardiostimulácie
Klinika kardiológie a angiológie NÚSCH a.s. a LF SZU Bratislava

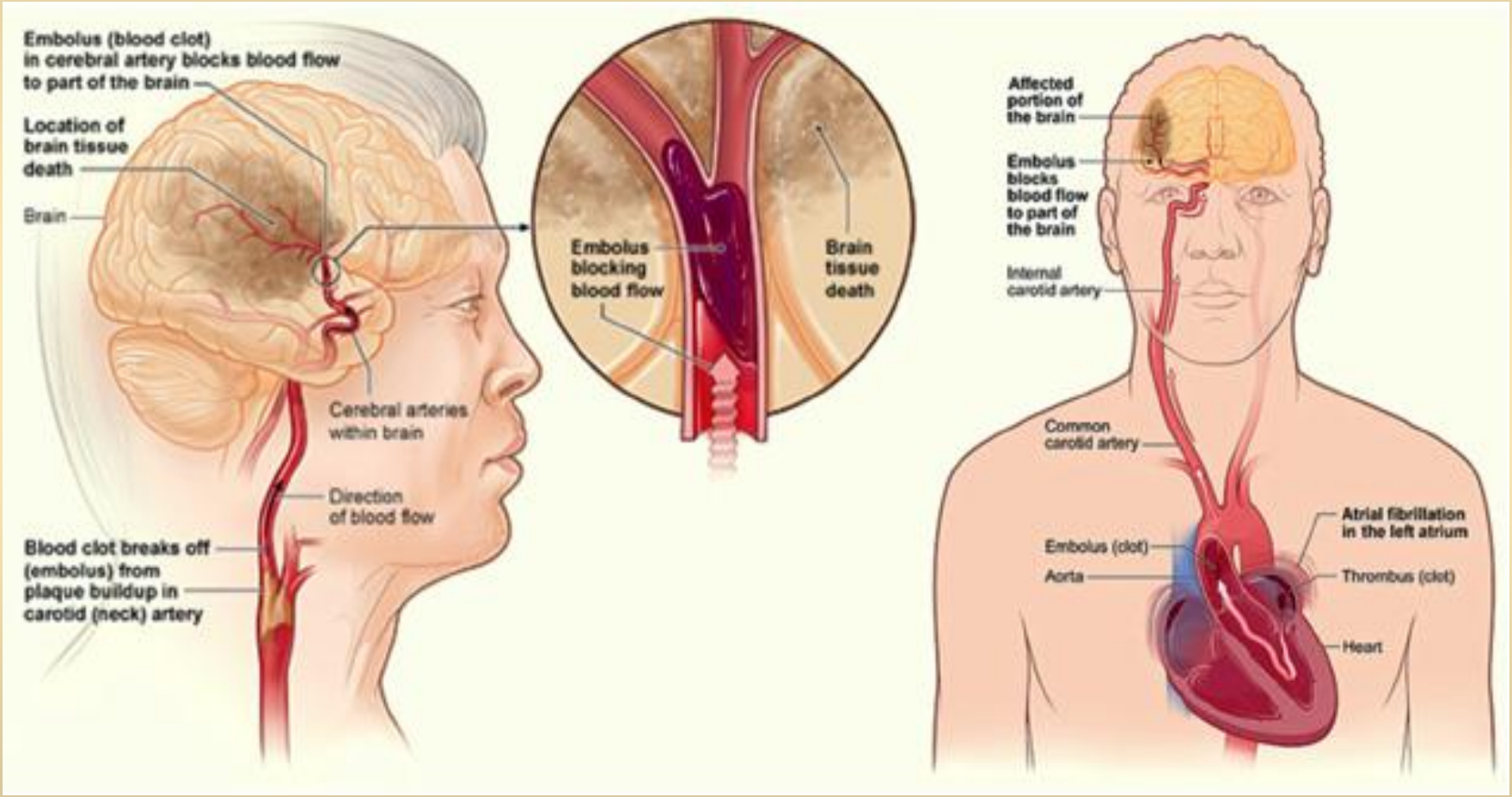


“Príbeh vynárajúceho sa ľadovca subklinickej FP”

Mechanisms of Stroke in Atrial Fibrillation

BUT:

ARE ALL TYPES OF AF EQUALLY THROMBOEMBOLIGENIC ?

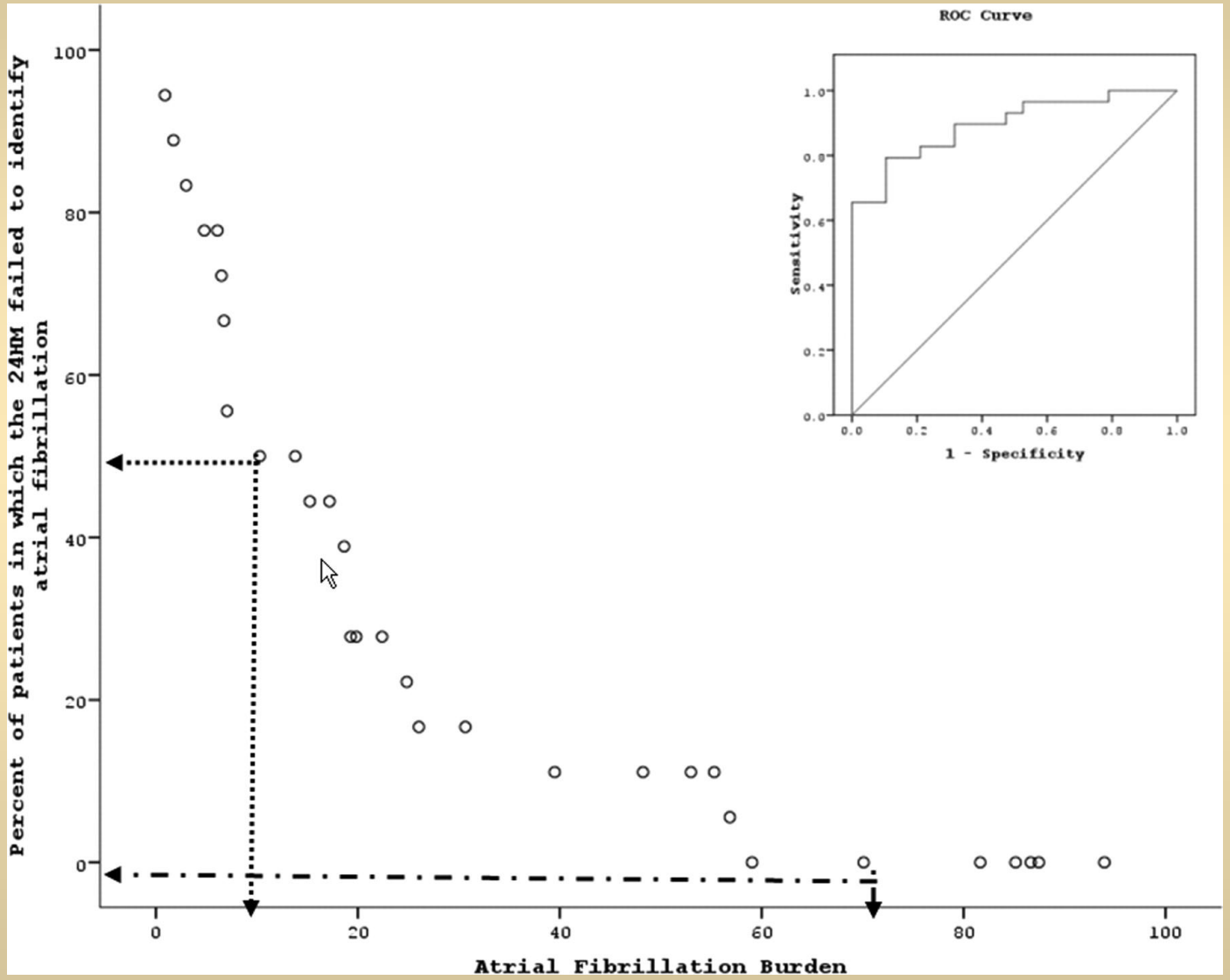


Chen-Scarabelli C et al., JACC 10.1016/j.jacc.2014.10.045

Tichá FP (”Silent Atrial Fibrillation”)

- **Silent AF** is an asymptomatic form of AF incidentally diagnosed during routine examination or manifesting as an AF-related complication, such as ischemic stroke or tachycardiomyopathy.
- The proportion of SAF to symptomatic AF can reach 12:1
- **SAF portends the same risk of ischemic stroke as symptomatic AF**
- **Real incidence of SAF is unknown = major gap in knowledge**

Percentage of patients in whom the 24-hour HM failed to identify AF recurrence vs. relative AF burden duration



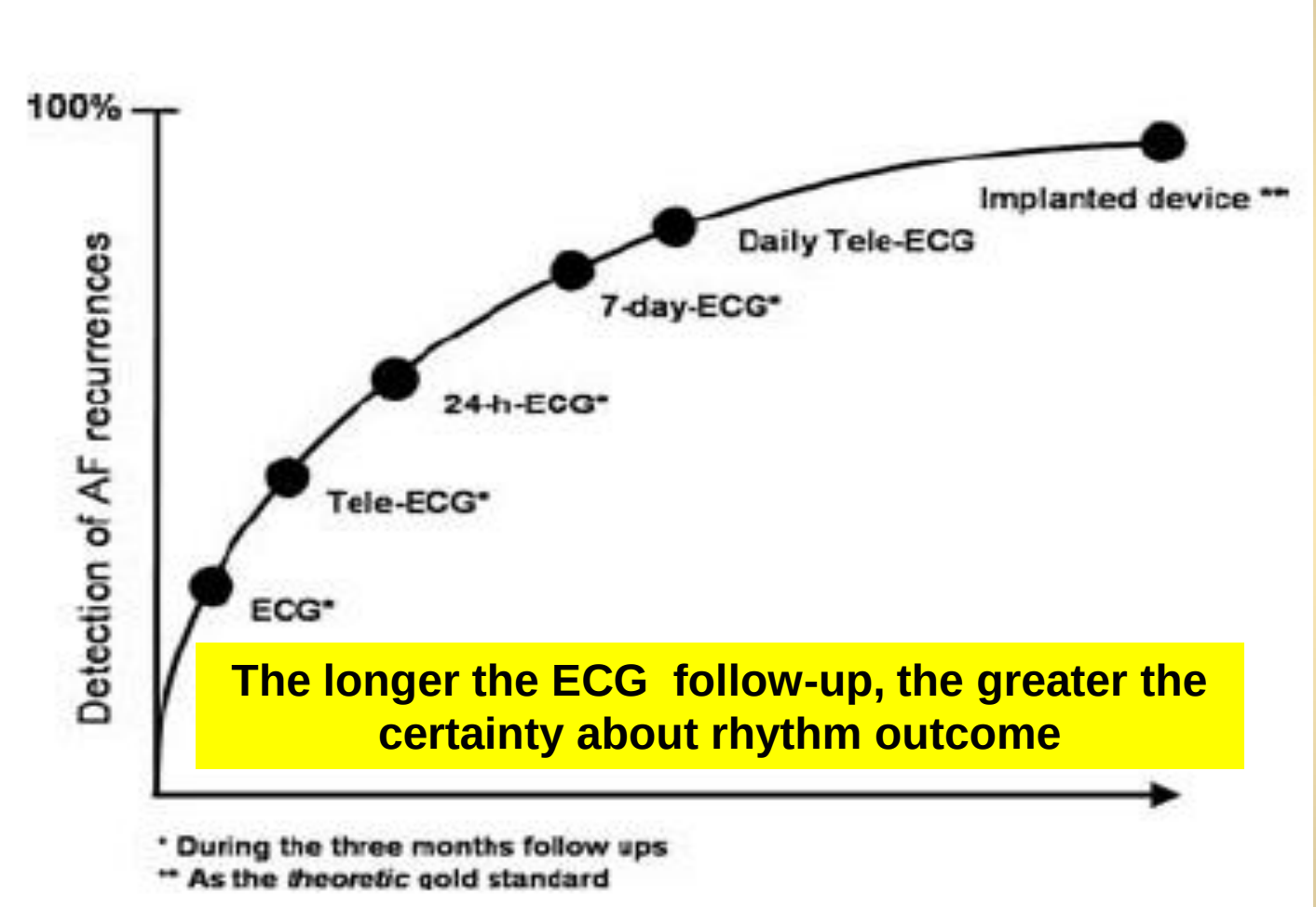
Hanke, T. et al. Circulation 2009;120:S177-S184

Intermittent ECG monitoring to detect AF - limitations

- Heavily biased by under-diagnosing AF events
- Very limited ability to characterize AF burden and temporal pattern (density)

BUT: The treatment of patient's symptoms as well as the prevention of stroke and heart failure is dependent on **accurate detection and characterization of AF**

Estimated correlation between F-U strategy and the rate of AF detection after RF ablation



Arya A et al., PACE 2007

Unmet needs for optimal AF management

- **UNDERDIAGNOSIS**
  - search for optimal diagnostic tools for asymptomatic / atypically symptomatic AF
- **LIMITED RELIABILITY OF CURRENT RISK STRATIFICATION**
  - **Neglected role of AF PATTERN**
    - Paroxysmal vs. persistent vs. permanent
  - **Neglected role of AF BURDEN**
    - **CRITICAL BURDEN -** defining AF burden critical for increased thromboembolic irisk ndicated for therapy
    - **BURDEN REDUCTION -** defining the impact (if any..) of burden reduction on prognosis

Subklinická fibrilácia predsiení At

Subklinická FP (SKAF) je asymptomatická forma krátkotrvajúcej FP diagnostikovanej počas dlhodobého kontinjálneho ekg monitorovania

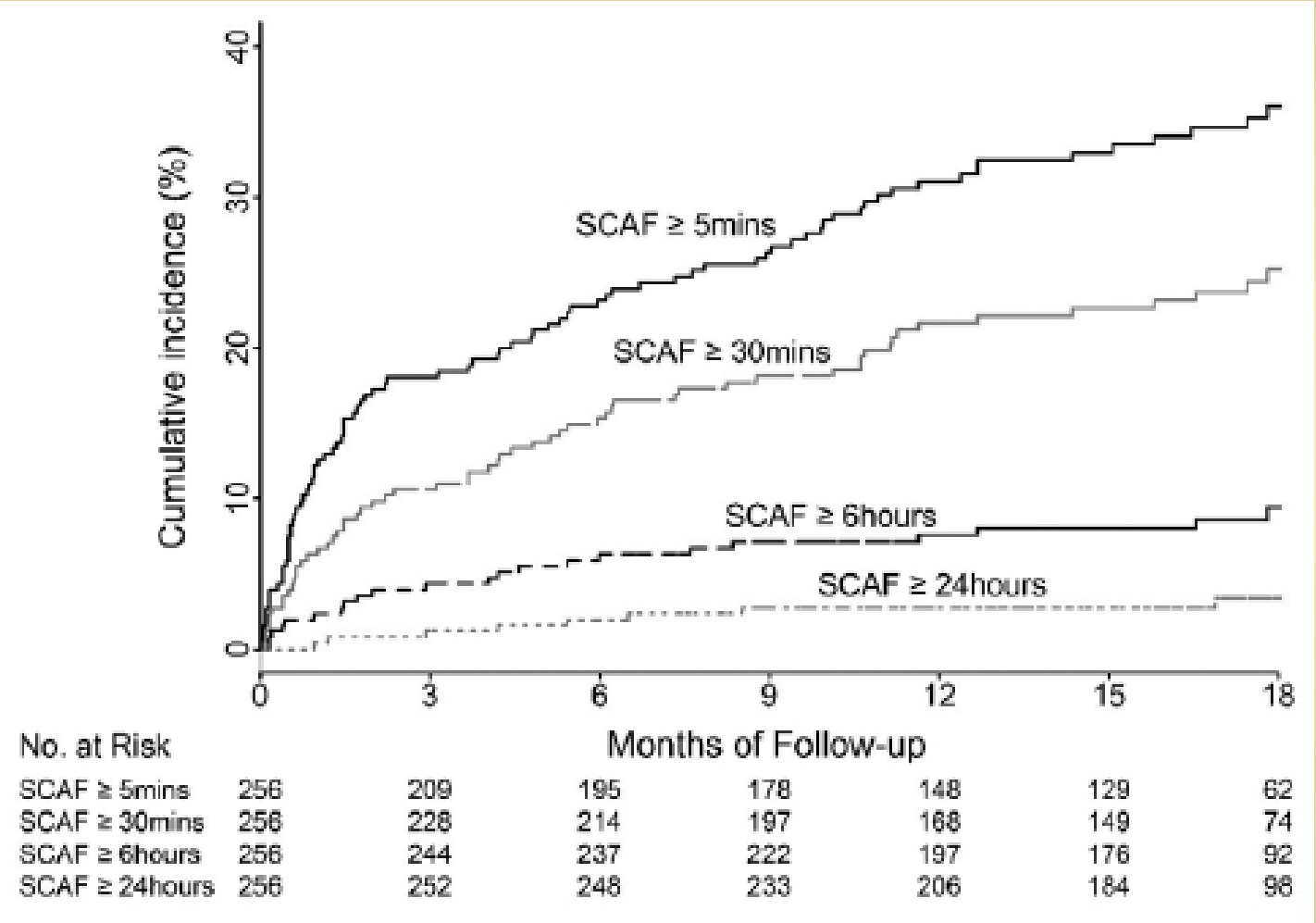
Subclinical Atrial Fibrillation

- Short-lasting SCAF detected after many weeks of monitoring represents a low overal burden of AF, which appears to convey an **increased risk of TE, albeit lower** than would be expected in clinical AF

	Rate of Ischemic Stroke/ Systemic Embolism (%/year)	
$CHADS_2$ Score	Clinical AF	SCAF
1	1.9	0.56
2	2.8	1.29
>2	4.0-12.5	3.78

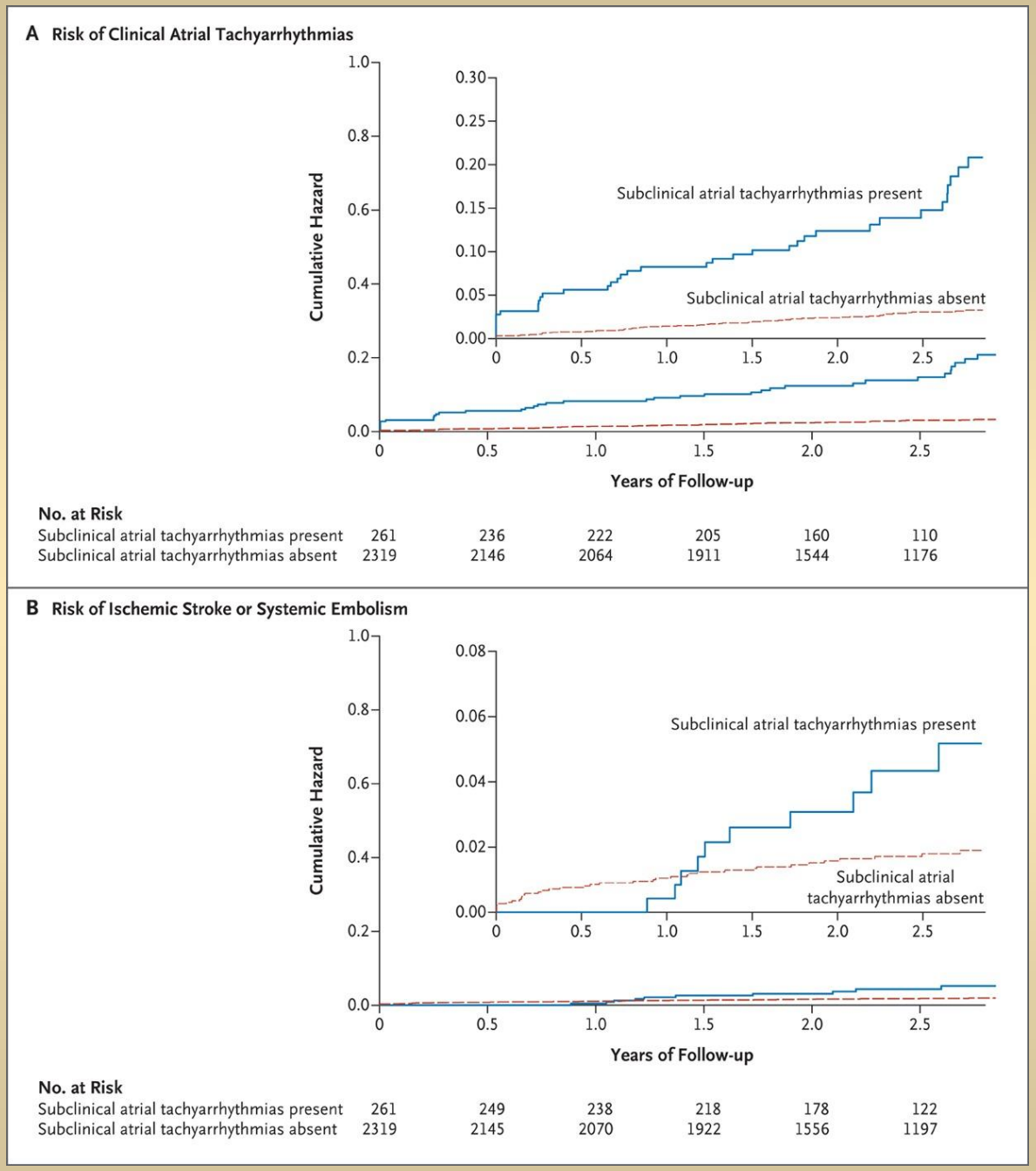
McIntyre and Healey, J A Fib 2017,

Cumulative rate of detection of different durations of subclinical atrial fibrillation (SCAF)



No. at Risk							
SCAF ≥ 5mins	256	209	195	178	148	129	62
SCAF ≥ 30mins	256	228	214	197	168	149	74
SCAF ≥ 6hours	256	244	237	222	197	176	92
SCAF ≥ 24hours	256	252	248	233	206	184	98

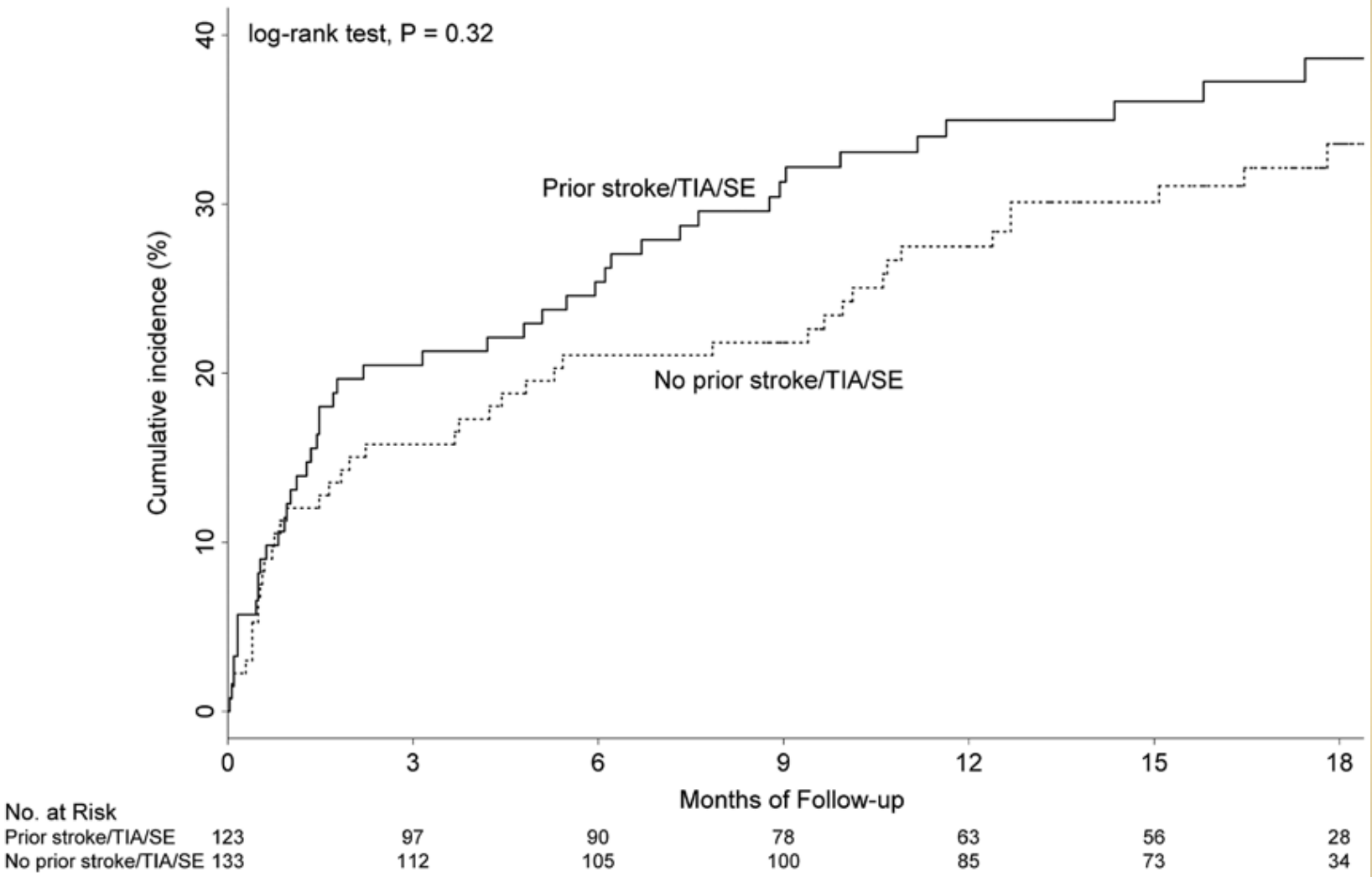
Healey JS et al., Circulation. 2017;136:1276–1283. DOI: 10.1161/CIRCULATIONAHA.117.028845



The Risk of Clinical Atrial Tachyarrhythmias and of Ischemic Stroke or Systemic Embolism, According to the Presence or Absence of Subclinical Atrial Tachyarrhythmias. ASSERT trial

Healey JS et al. N Engl J Med 2012;366:120-129

SCAF and stroke in the elderly



Healey JS et al., Circulation. 2017;136:1276–1283. DOI: 10.1161/CIRCULATIONAHA.117.028845

Table 3. Risk of Ischemic Stroke or Systemic Embolism after the 3-Month Visit, According to Baseline $CHADS_2$ Score and According to Whether Subclinical Atrial Tachyarrhythmias Were or Were Not Detected between Enrollment and the 3-Month Visit.

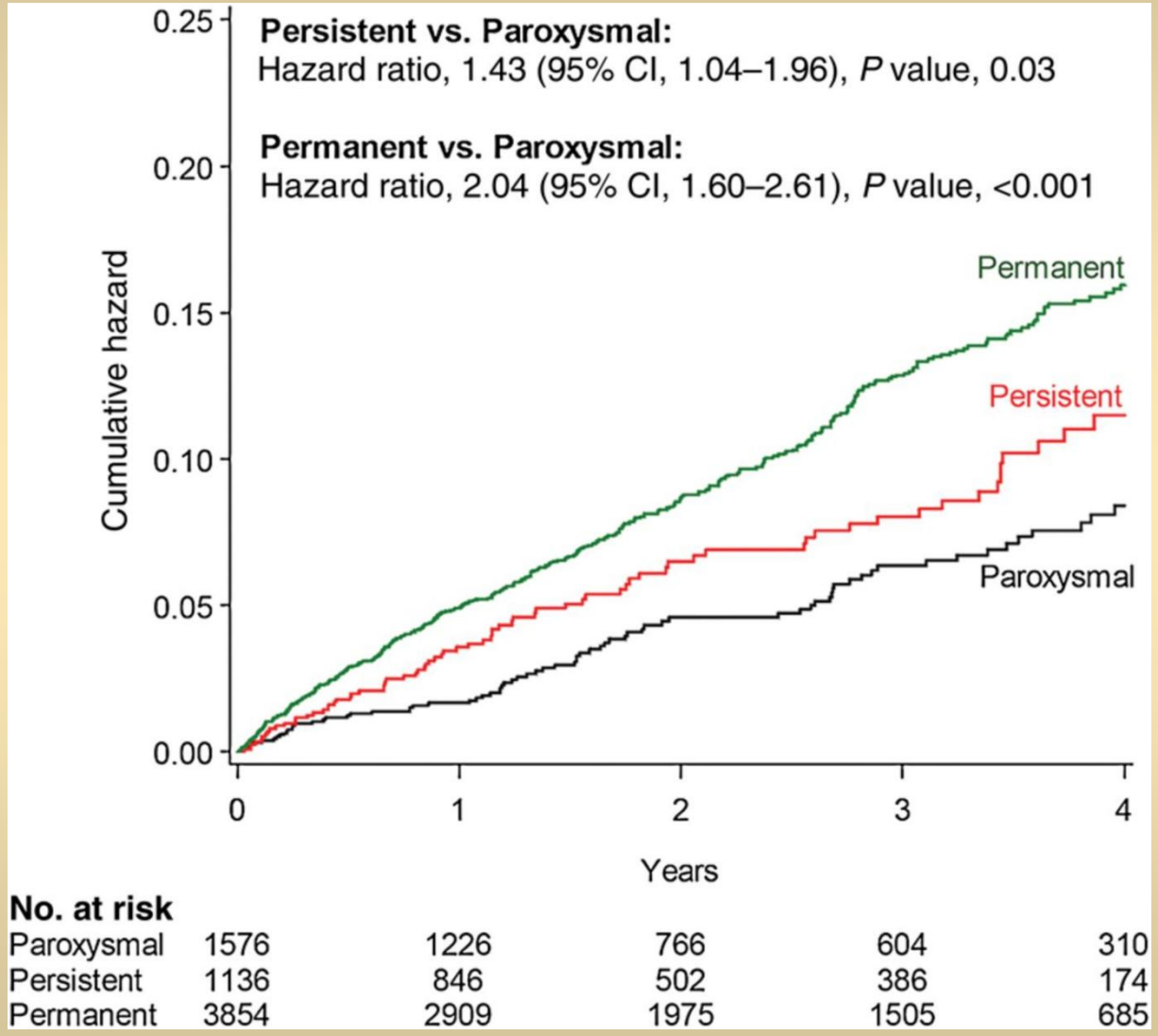
$CHADS_2$ Score	No. of Patients	Subclinical Atrial Tachyarrhythmias between Enrollment and 3 Months						Hazard Ratio for Ischemic Stroke or Systemic Embolism with Subclinical Atrial Tachyarrhythmias (95% CI)*
		Present			Absent			
		no. of patients	*no. of events*	*%/yr*	*no. of patients*	*no. of events*	*%/yr*	
1	600	68	1	0.56	532	4	0.28	2.11 (0.23–18.9)
2	1129	119	4	1.29	1010	18	0.70	1.83 (0.62–5.40)
>2	848	72	6	3.78	776	18	0.97	3.93 (1.55–9.95)

* The P value for trend is 0.35.

Healey JS et al. N Engl J Med 2012;366:120-129

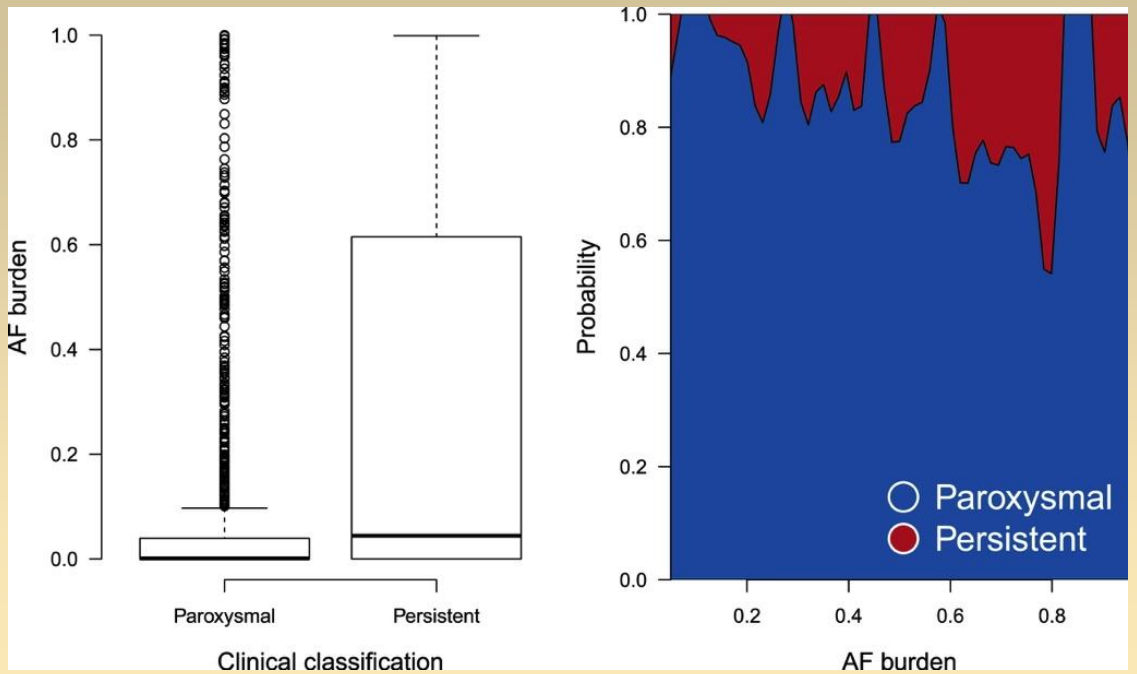
Risk of ischaemic stroke according to pattern of AF

analysis of 6563 aspirin-treated patients in ACTIVE-A and AVERROES

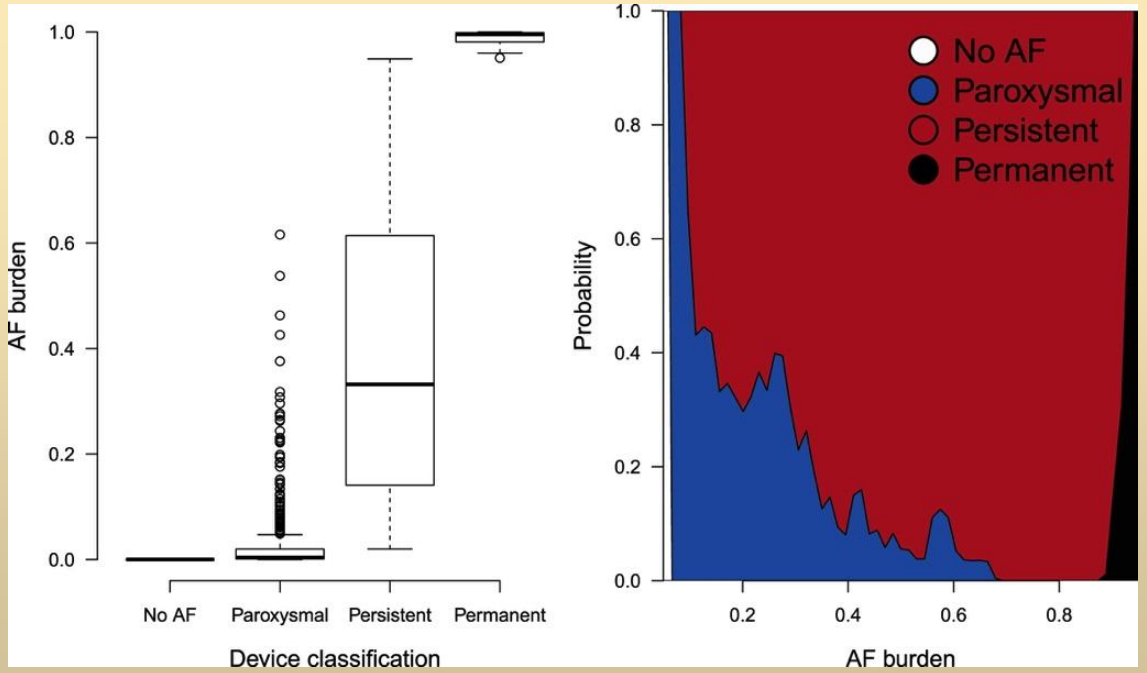


Vanassche T et al., Eur Heart J. 2014;36(5):281-288. doi:10.1093/eurheartj/ehu307

SUBKLINICKÁ PERZISTUJÚCA FP = dôsledok nedostatočnej spoľahlivosti klasických kritéria pre diagnostiku paroxyzmálnej versus perzistujúcej FP



Clinical classification



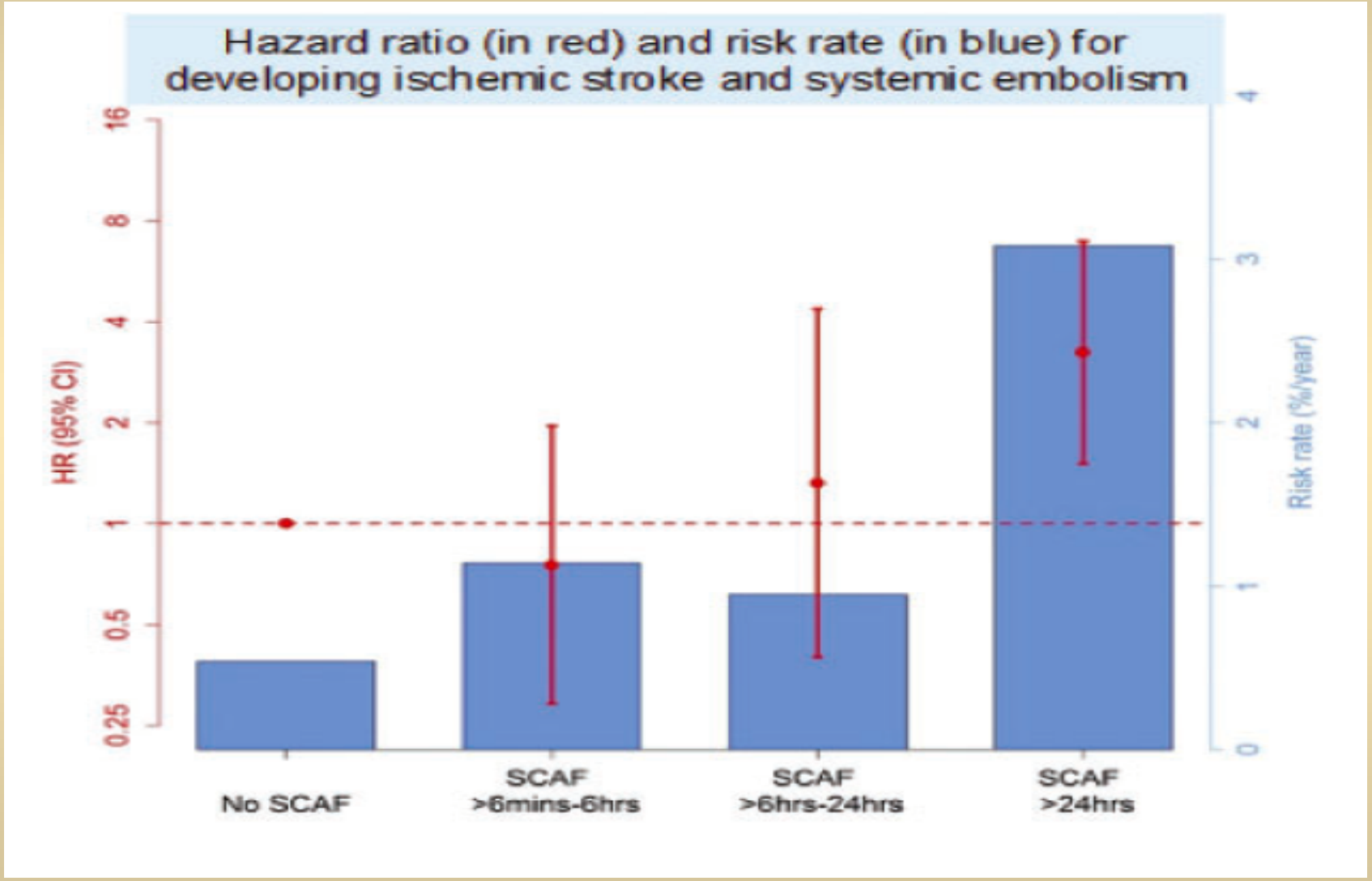
Device classification

Different stroke risk for non-paroxysmal versus paroxysmal AF?

- Non-paroxysmal atrial fibrillation is associated with a highly significant increase in TE and death.
- Impact of this observations:
  - Need to integrate AF type into scoring systems for TE risk
  - Need for new therapies to prevent AF progression – focus on <u>early</u> ablation of AF substrate !

Ganesan A et al., Eur Heart J. 2016 May 21;37(20):1591-602

ASSERT : SCAF >24 h is associated with comparable risk of ischemic stroke / systemic embolism as clinical AF



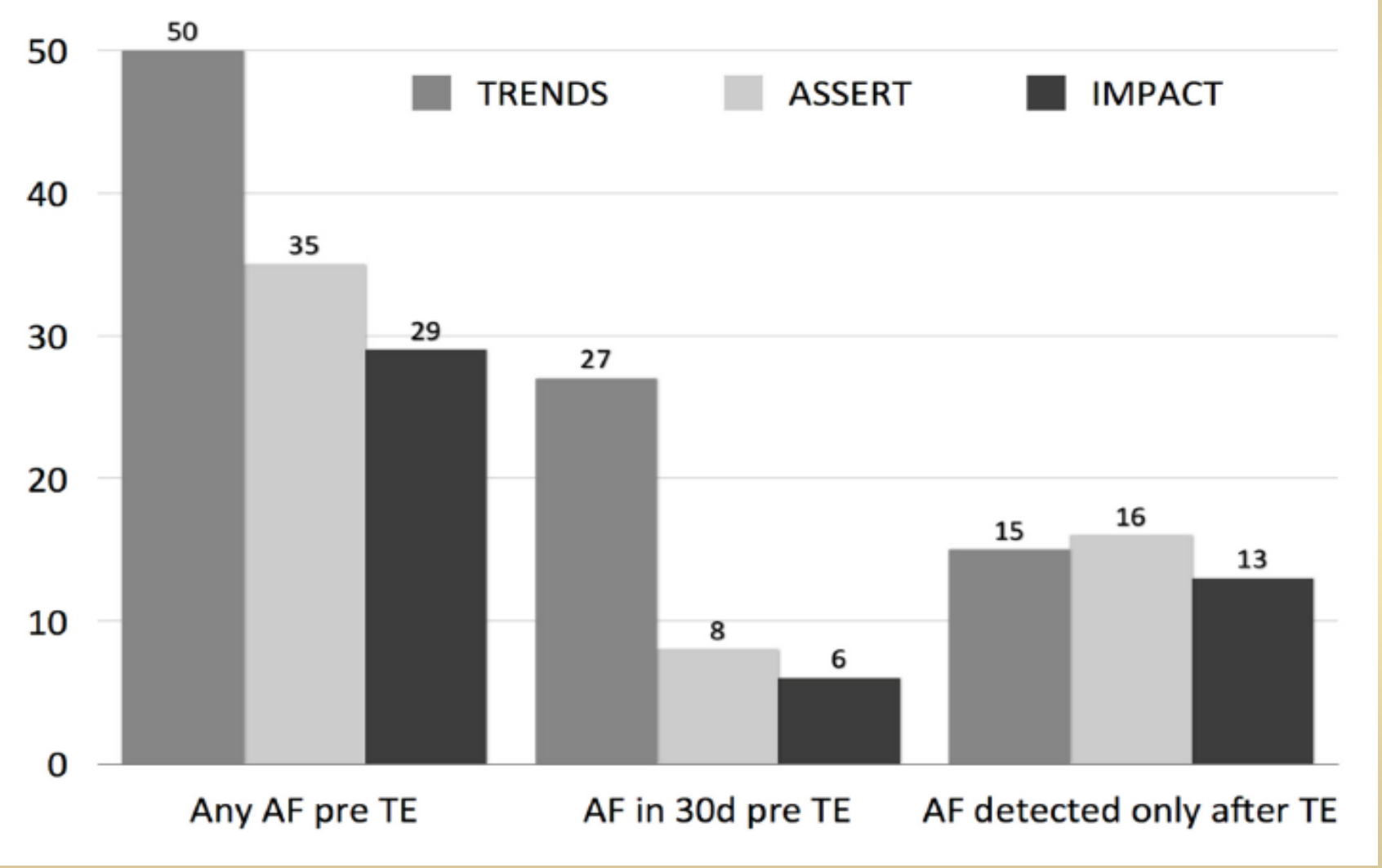
Van Gelder I et al., Eur Heart J. 2017 May 1;38(17):1339-1344. doi: 10.1093/eurheartj/ehx042

Temporal Relationship Between Cardiac Implanted Electronic Device–Detected Atrial High-Rate Episodes and Stroke

Trial	Number of Patients With TE Event	Definition of AF Episode	Any AF Detected Before TE Event	AF Detected Only After TE Event	No AF in 30 Days Before TE Event
Boriani et al[42]	33/3438	5 min	21/33 (64%)	NA	12/33 (67%)
TRENDS[9]	40/2486	5 min	20/40 (50%)	6/40 (15%)	29/40 (73%)
ASSERT[11,37]	51/2580	6 min	18/51 (35%)	8/51 (16%)	47/51 (92%)
IMPACT[19]	69/2718	36/48 atrial beats ≥200 beats per minute	20/69 (29%)	9/69 (13%)	65/69 (94%)
Turakhia et al[41]	187/9850	≥5.5 h or ≥6 min on any day 120 days previously	36/187 (19%) ≥5.5 h 50/187 (26%) ≥6 min	NA	NA

Freedman B et al., Circulation. 2017;135:1851–1867. DOI: 10.1161/CIRCULATIONAHA.116.026693

Lack of Temporal Proximity of Device-Detected AF to Stroke Events



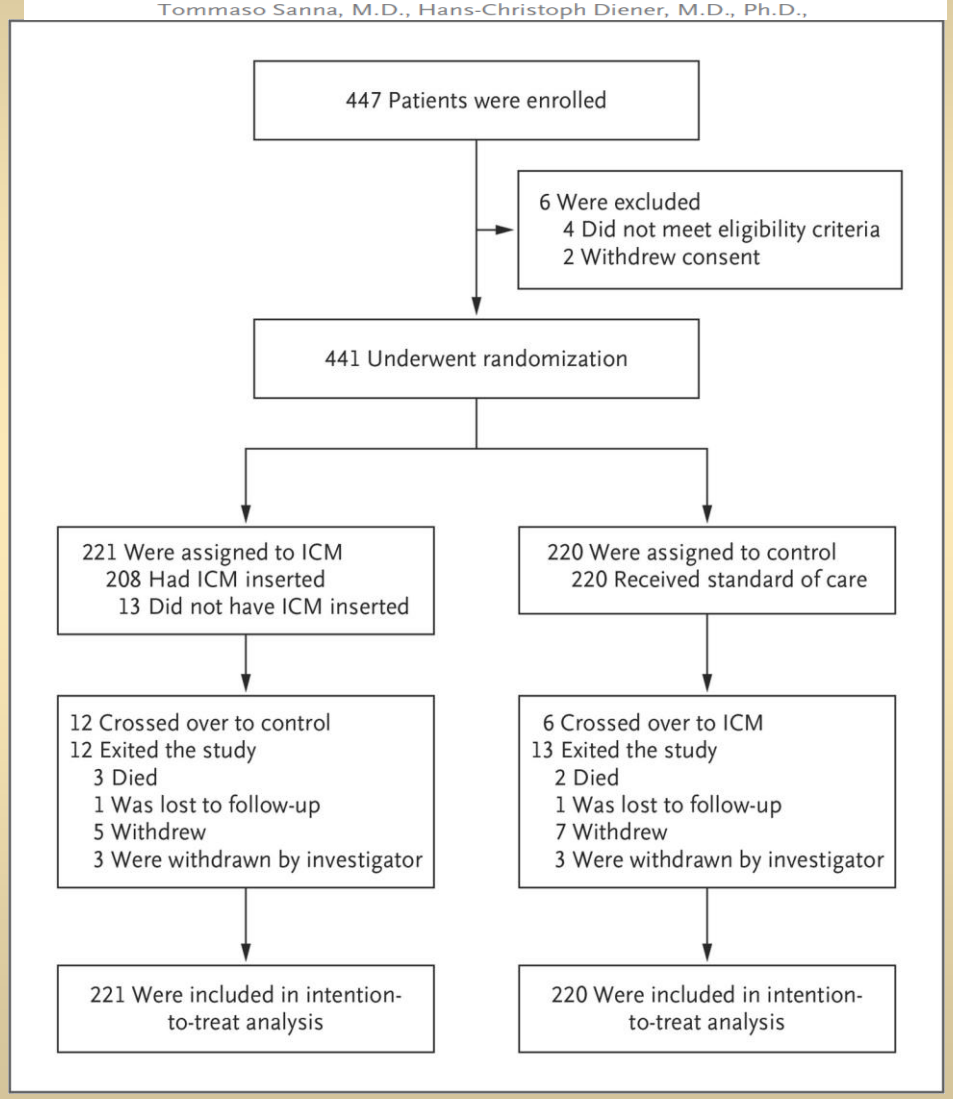
Andrade JG et al., Front. Physiol. 6:100. doi: 10.3389/fphys.2015.00100

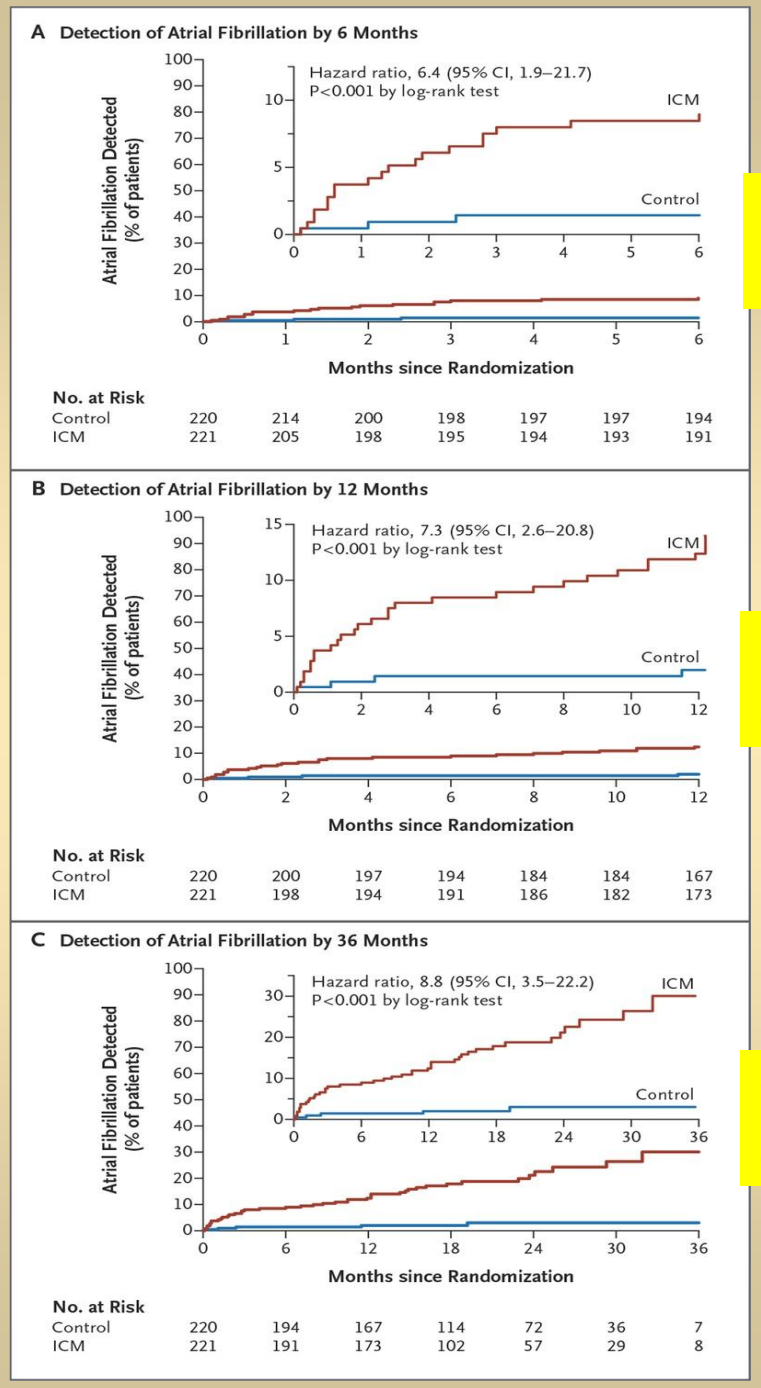
The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Cryptogenic Stroke and Underlying Atrial Fibrillation

Tommaso Sanna, M.D., Hans-Christoph Diener, M.D., Ph.D.,





6.4x more AF detected

7.3x more AF detected

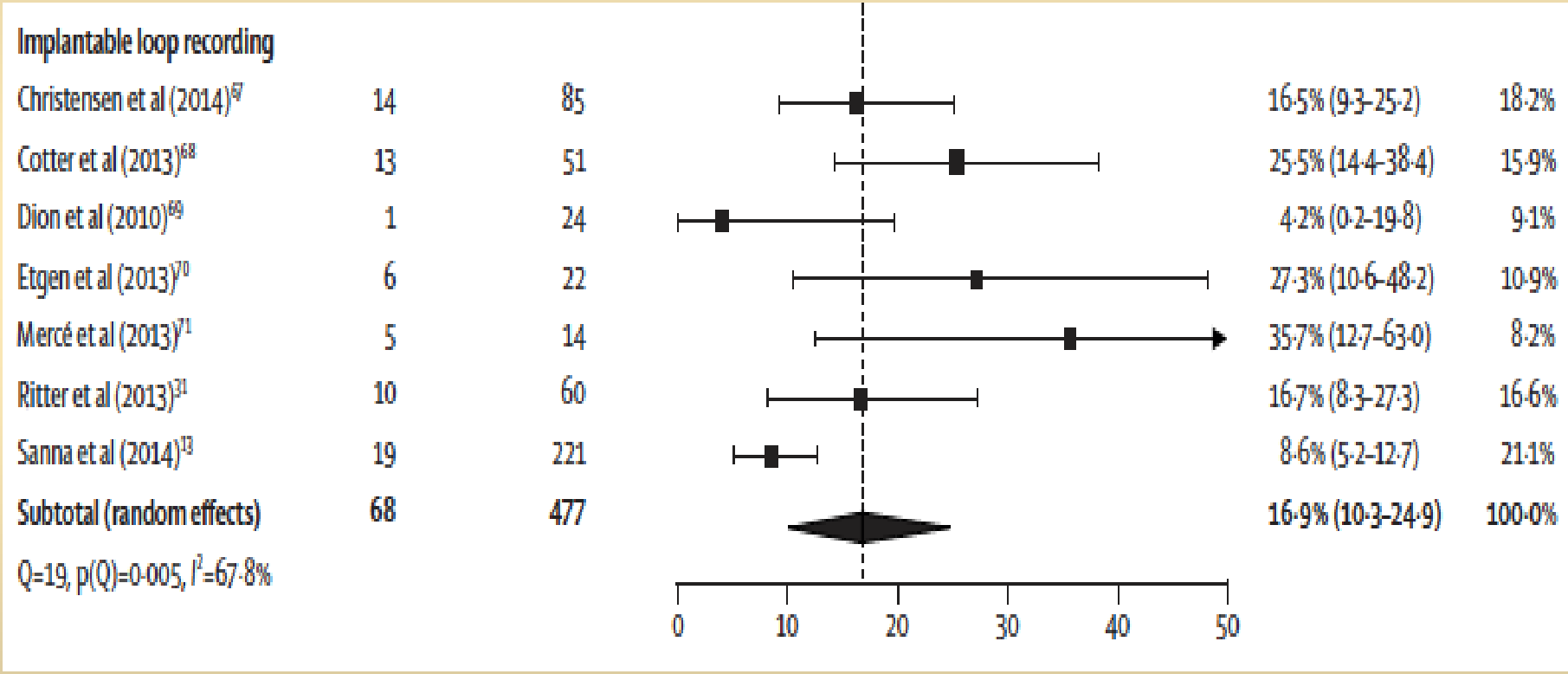
8.8x more AF detected

Sanna T et al. N Engl J Med 2014;370:2478-2486

Je potrebné antikoagulovať všetkých pacientov s detekovanou subklinickou FP a CHA_2DS_2-VASc kalkulovaným rizikom ?

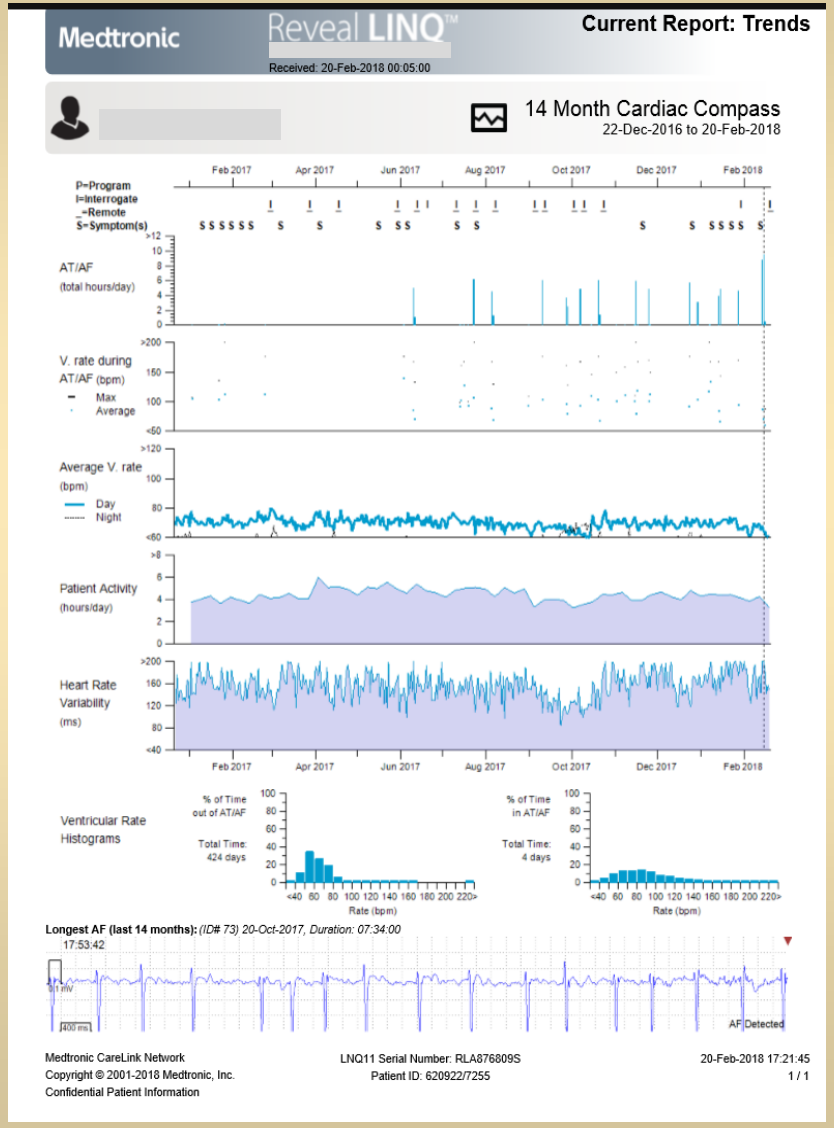
- Z hľadiska rizika CMP nevieme kvantifikovať kritickú záťaž FP (burden)
- Pri extenzívnom ekg monitorovaní, ktoré sa stáva dostupné vďaka novým technológiám, bude dramaticky narastať prevalencia paroxyzmálnej FP v populácii
- Aplikácia našich súčasných zjednodušených predstáv o indikácii k antikoagulačnej liečbe hrozí jej masovým nadužívaním

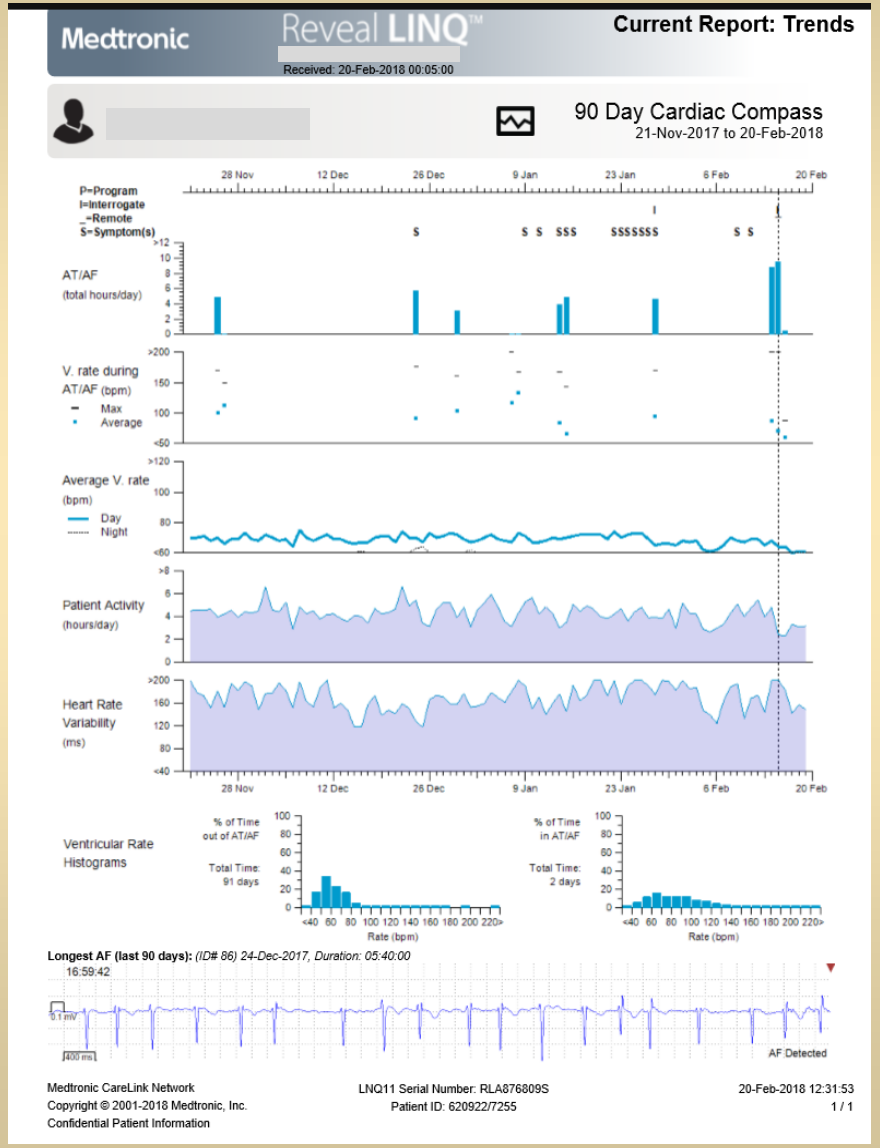
Proportion of patients diagnosed with post-stroke AF

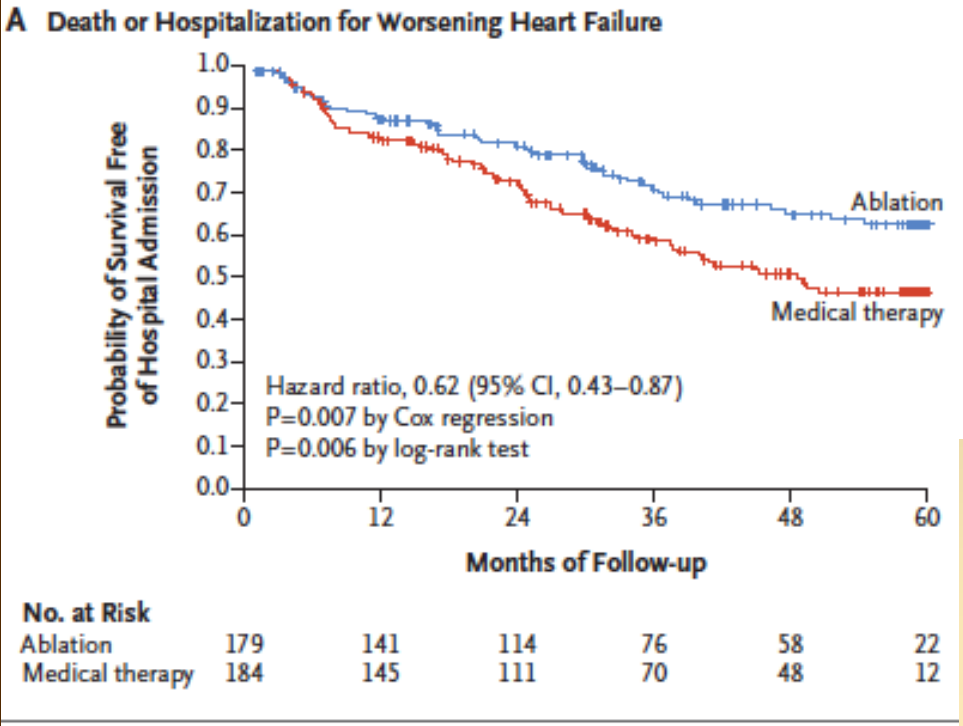


Sposato LA et al., Lancet Neurology 2015, doi: 10.1016/S1474-4422(15)70027-X

Increase of burden of paroxysmal AF during 14 months of waiting period for PVI







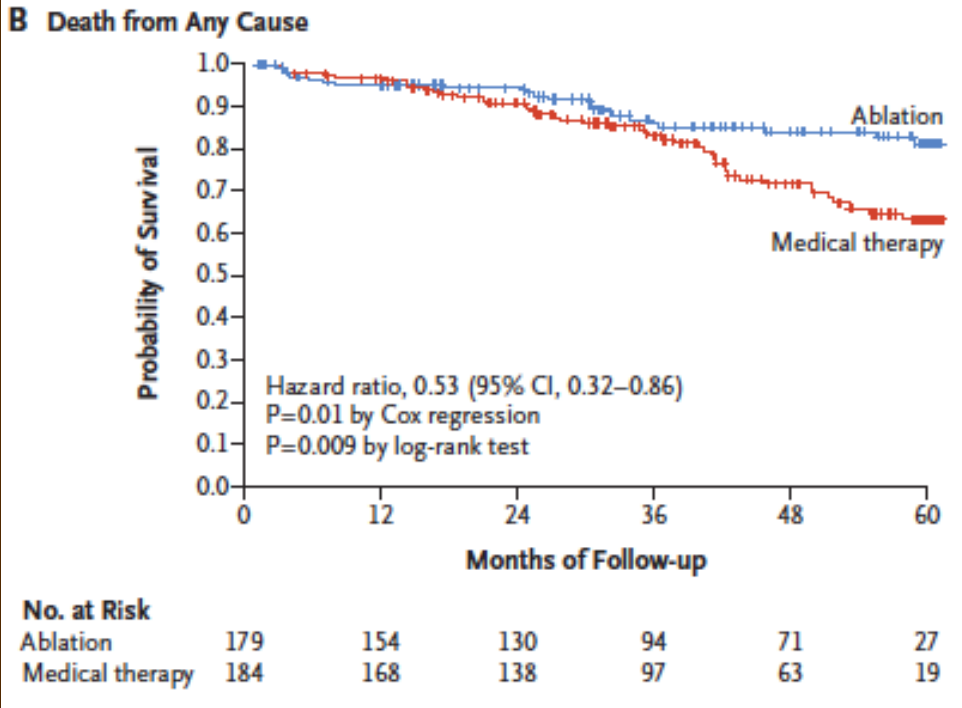
The NEW ENGLAND JOURNAL of MEDICINE

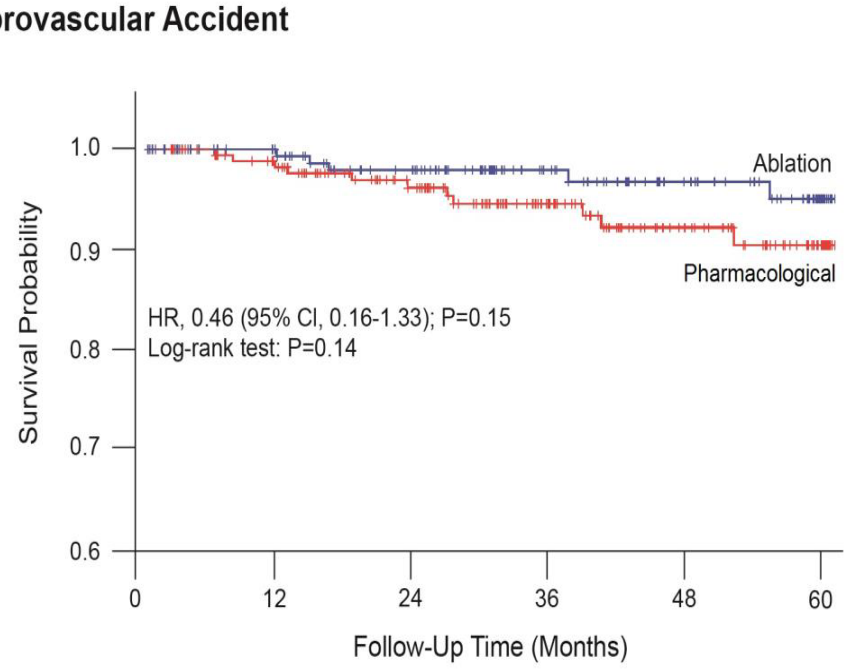
ESTABLISHED IN 1812 FEBRUARY 1, 2018 VOL. 378 NO. 5

Catheter Ablation for Atrial Fibrillation with Heart Failure

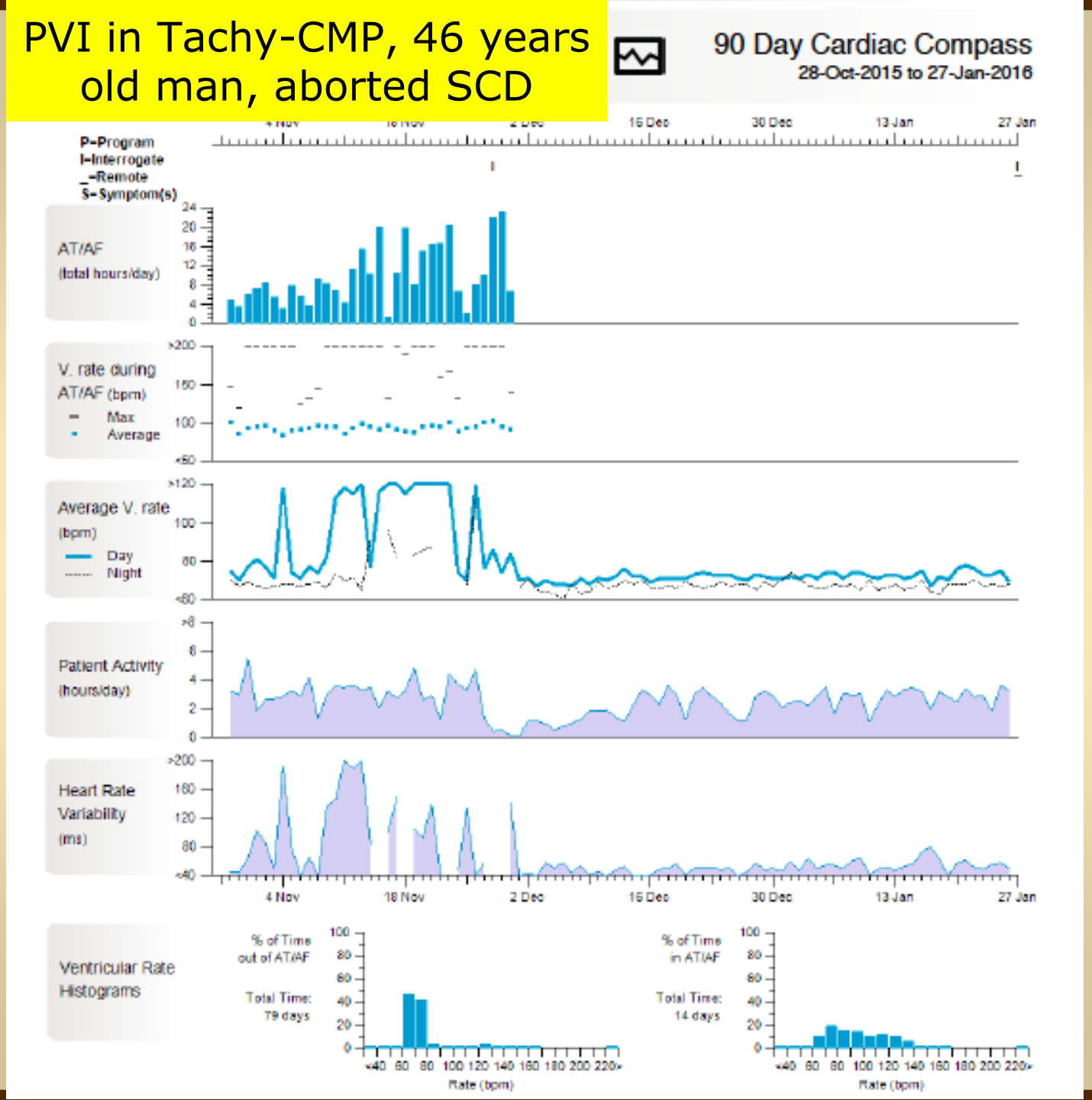
Nassir F. Marrouche, M.D., Johannes Brachmann, M.D., Dietrich Andresen, M.D., Jürgen Siebels, M.D., Lucas Boersma, M.D., Luc Jordaens, M.D., Béla Merkely, M.D., Evgeny Pokushalov, M.D., Prashanthan Sanders, M.D., Jochen Proff, B.S., Heribert Schunkert, M.D., Hildegard Christ, M.D., Jürgen Vogt, M.D., and Dietmar Bänsch, M.D., for the CASTLE-AF Investigators*

Marrouche NF et al., N Engl J Med 2018;378:417-27.
DOI: 10.1056/NEJMoa1707855

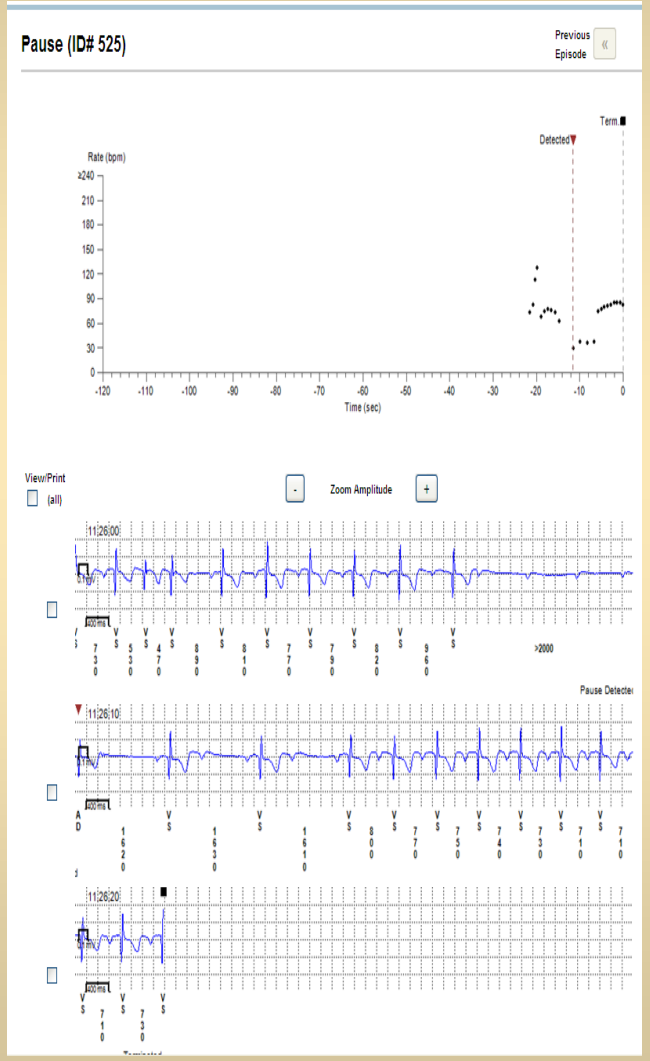




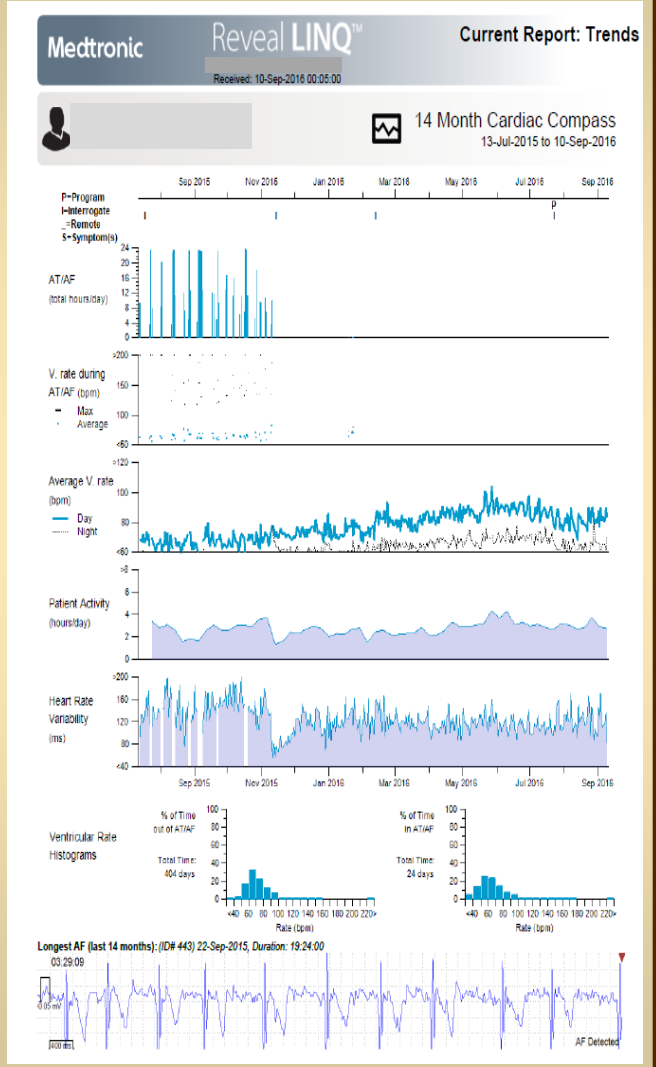
PVI in Tachy-CMP, 46 years old man, aborted SCD



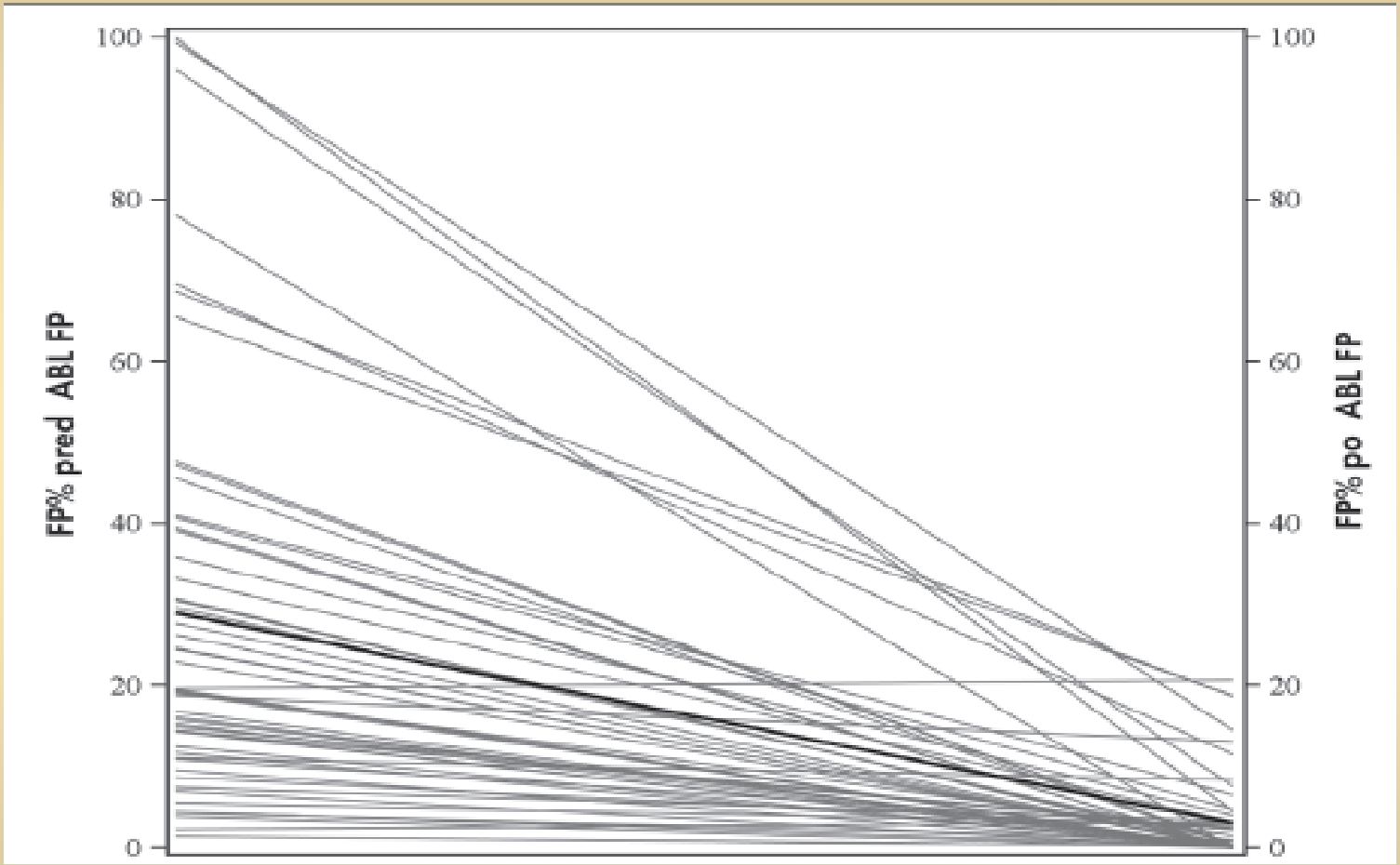
REVEAL & CARE link



- 53-year old lady, recurrent paroxysmal AF, EHRA III, known AVB 1-2 on AA drugs
- ILR verified AVB 3 (dronedaron + betablocker), asymptomatic
- PVI 2015, longterm zero burden



Atrial fibrillation burden (AF%) before and after AF ablation



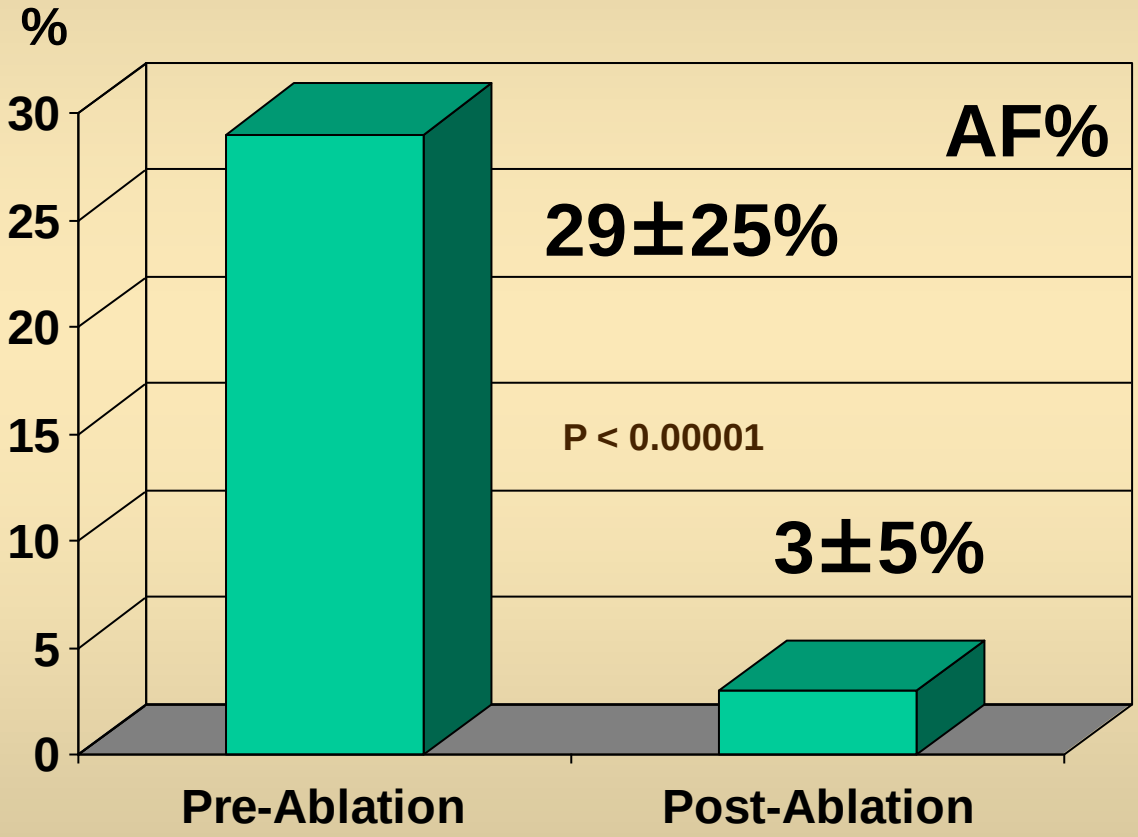
Each line is an individual patient, and the black thick line represents the change in the means (Wilcoxon signed rank sum test)

Urban L et al. Cardiology Letters 2014, 23(2):104-114

AF Burden Pre vs Post RFCA

N=52 Pts

Ablation comprised PVI only in 31 pts (60%) of pts, linear lesions were added in 21 (41%)



Median AF% Pre-Ablation: 19.5%

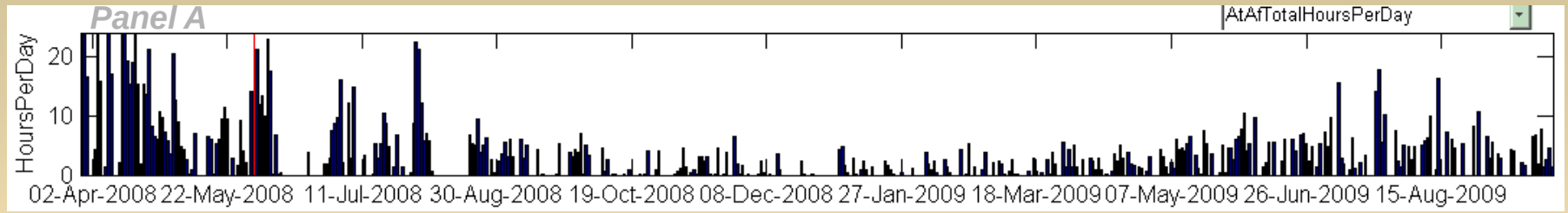
Third Percentile: 39%

Median AF% Post-Ablation: 0.4%

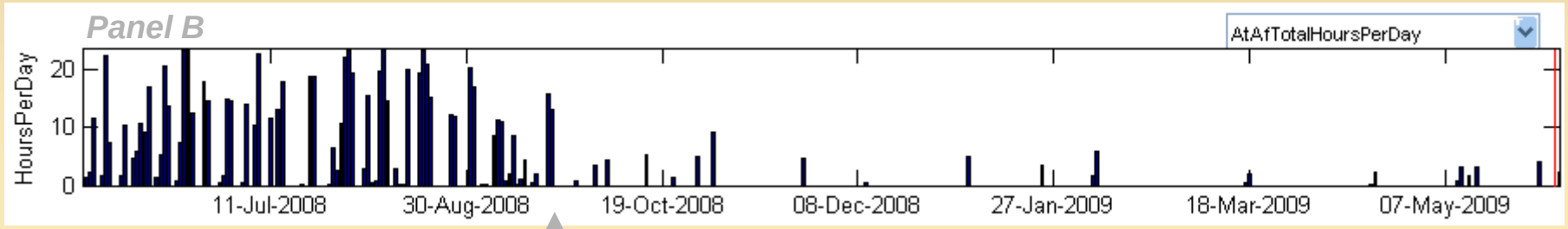
Third Percentile: 3%

➔ ILR confirms dramatic reduction of AF% by RFCA in paroxysmal AF

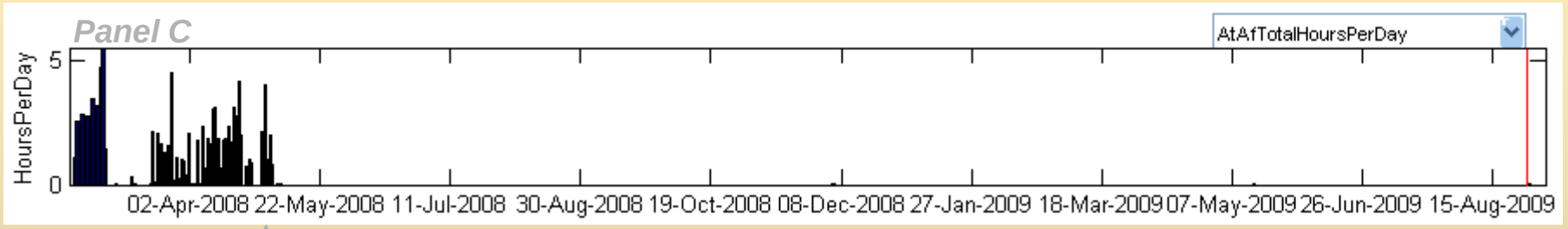
Cardiac Compass from ILR representing total atrial fibrillation (AF) duration each day of the corresponding F-U period before and after AF ablation



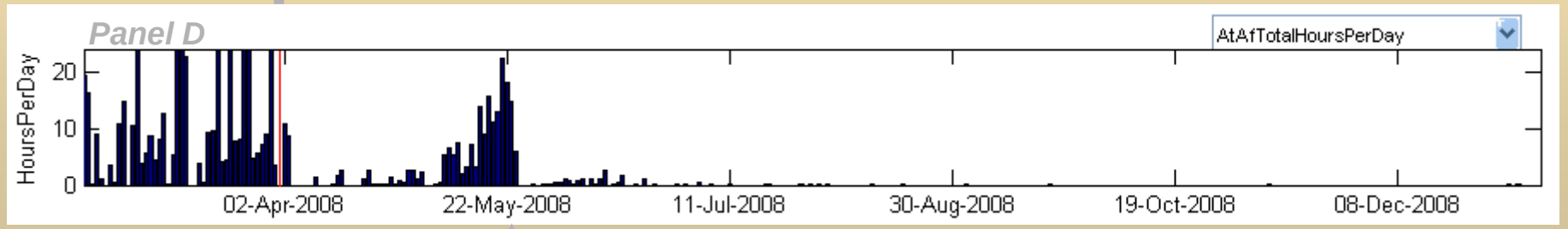
ablation



ablation



ablation



ablation

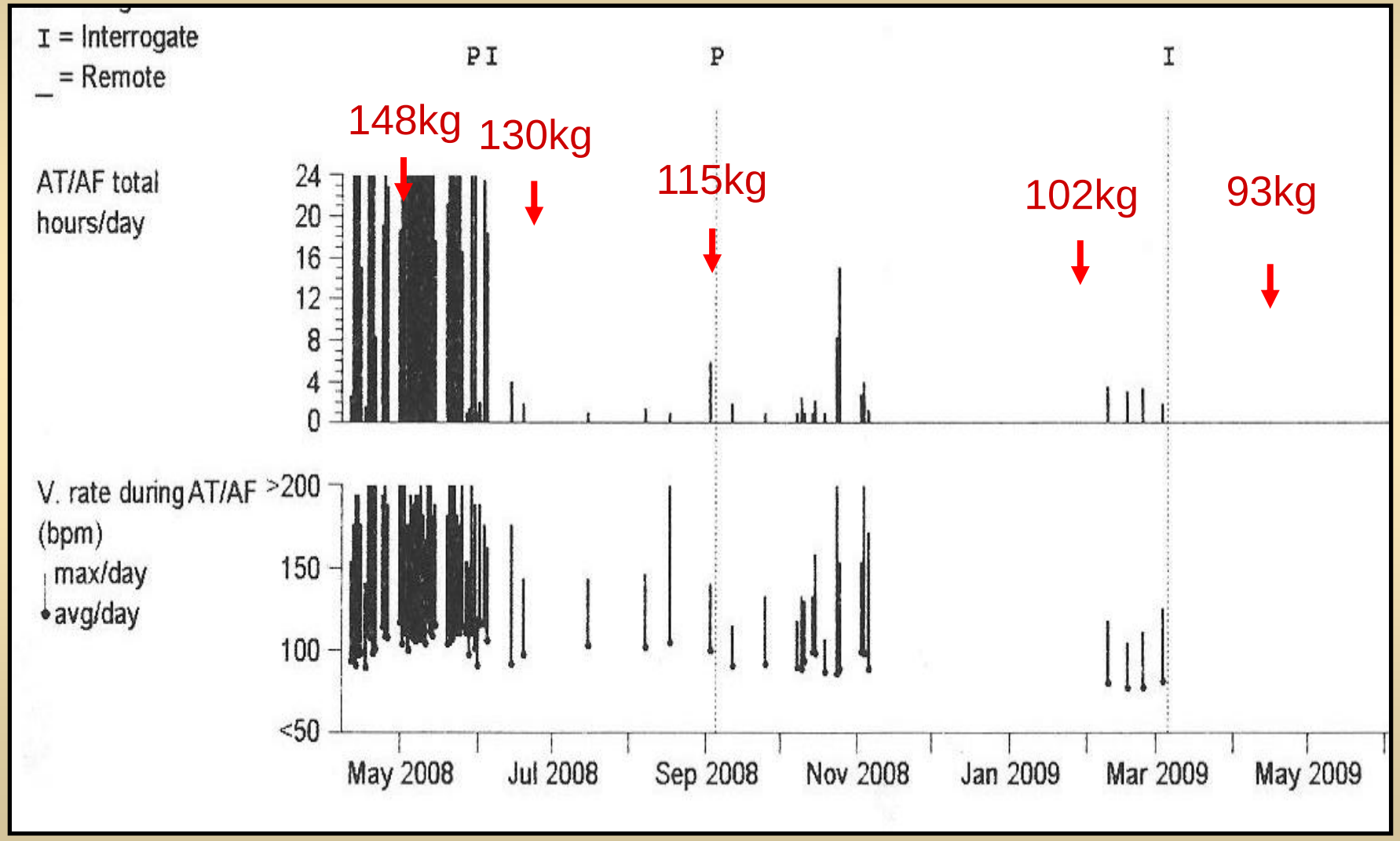
UNMET NEED FOR ADVANCED AF DETECTION

- **Enhanced AF detection may allow for**
  - Long term monitoring in order to detect AF in persons with high probability of **undetected subclinical AF**
  - **Quantification of AF burden**
  - Assessing the role of **quantitative AF parameters** (pattern, burden) **for TE risk**

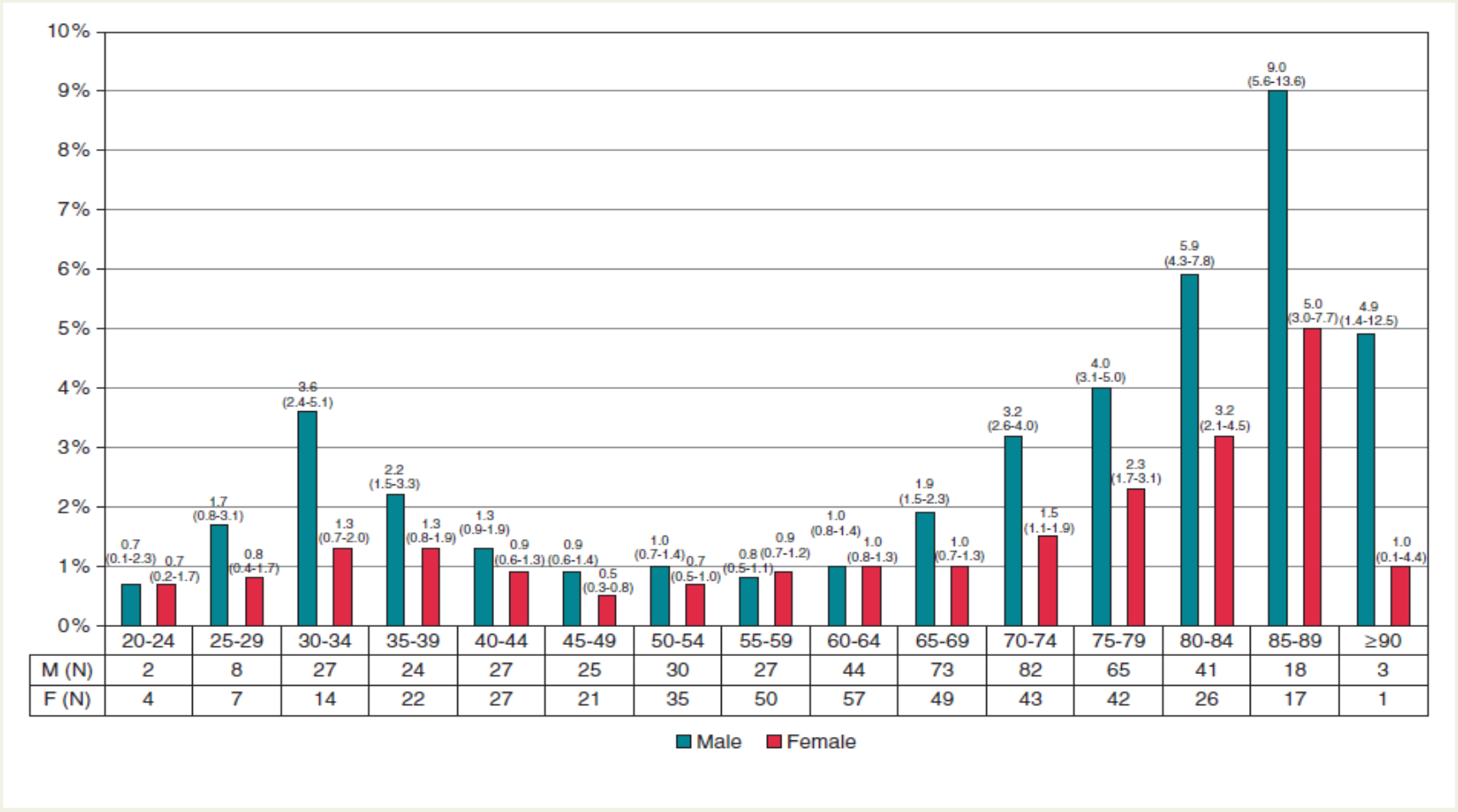
Future trends in enhanced AF detection

- Ecg long-term monitoring as “byproduct” with **implantable therapeutic pulse generators**
- **Dedicated ecg long-term monitoring**
  - **Implantable loop recorders**
  - Wearables
  - Smartphones

AFIB and obesity



Prevalencia FP v bežnej populácii u 65747 skrínovaných v Belgicku počas týždňa srdcového rytmu medzi 2010 a 2014



	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	≥90
M (N)	2	8	27	24	27	25	30	27	44	73	82	65	41	18	3
F (N)	4	7	14	22	27	21	35	50	57	49	43	42	26	17	1

1. Proietti M et al. Europace 2016;18:1779–86.
2. Mairesse GH et al. Europace. 2017;19(10):1589-1623

Subklinické formy FP - ideálna millieu pre ILR a exaktnejšiu diagnostiku

- Miniaturization and remote monitoring create a very **user-friendly tool for monitoring**
- Highly effective search for AF post cryptogenic stroke – allows for effective prevention of TE
- Unprecedented precision in assessing effectiveness of any AA therapy – focus on ablation
- New insight into temporal characteristics and classification of AF
- **Key role for elucidating important knowledge gaps**:
  - **precise AF classification**
  - **treshhold AF burden for increased TE risk**

EVANJELIUM PODĽA MATÚŠA 7:7

LEBO KAŽDÝ,KTO HĽADÁ, NÁJDE...

“Čumil” v Starom Meste Bratislavy